Writing the discharge summary:
A cost performance analysis using a computerized patient record system

J.H. Hohnloser, T. Engelmeier
Med. Klinik, Klinikum Innenstadt (Dir. Prof. Dr. P. C. Scriba)
Ludwig-Maximilians-Universität München, Ziemssenstr. 1, 80336 München, Germany

Written or typed documents are still a major source of information in medicine. Writing or dictating discharge summaries is amongst the most common tasks performed by clinicians. This task can take substantial time and is frequently split between the physician and a typists pool. Computerized patient record systems are thought to save time by avoiding redundant data entry and preformatting of documents. This paper presents a cost performance analysis for writing discharge summaries in a medical university hospital. In addition to the impact of the discharge writing module of a computerized patient record system as compared to traditional typing a cost performance analysis is carried out comparing the cost per unit time needed and per discharge summary for physicians as opposed to secretaries.

The basis for this analysis were 1) data extracted from the computerized patient record system PADS (Patient Archiving & Documentation System) in operation at the University of Munich since 1990, 2) computer based data from PCs used for writing discharge summaries in the typists pool and 3) data from hand-written documentation about discharge summaries processed in the typists pool

Our results indicate that

a) secretaries using a PC based word processor as an electronic typewriter need more time ($p \geq 0.001$) to finish a discharge summary (85 ± 1.46 minutes, $n = 870$) than secretaries working with a computerized patient record, in which a discharge summary module is integrated into a database application where much of the information is already preformatted and prewritten (67.8 ± 3.85 (median 59.7), $n = 149$).

b) junior physicians (interns and first year residents) need more time ($p \geq 0.001$) per summary (54.52 ± 2.96) than intermediate (year 2-4; mean time 36.15 ± 2.83 minutes) or senior physicians (≥ 5 years; 34.81 ± 2.46).

c) Due to their lower income on a cost per minute basis first year residents produce the cheapest ($p \geq 0.001$) pages (5.06 $/page) followed by secretarial staff (9.10 $/page) and physicians (20.42 $/page).

d) taking b) and c) into consideration a discharge summary produced by a junior physician costs 9.33 $, by a secretary 22.31 $, 24.98 $ and 24.06 $ when produced by intermediate and senior physicians, respectively, when the computerized patient record system is used.

We conclude that

a) secretaries need 20.21 % less time ($p \geq 0.001$) to finish a discharge summary when using a computerized patient record system as compared to the traditional - typewritten or PC-based - approach. This translates into 614.65 $ US saved per secretary per month. For our 180 bed hospital the estimated total sum saved per year for the whole typist pool (9 full positions) amounts to 66,383.21 $ US

b) the time for physicians to finish a discharge summary depends on their clinical age.

c) physicians need less time ($p \geq 0.001$) than secretaries to finish a discharge summary (time gain 19.4, 46.7 % and 46.7 % for junior, intermediate and senior physicians, respectively.

c) on a time-corrected cost-per-discharge-summary basis with the secretaries salary as a reference the cheapest letters are produced by junior staff (58.2 % cheaper) whereas letters written by intermediate or senior physicians are only slightly more expensive (11.96 % and 10.78 %, respectively).

Based on this analysis we recommend the integration of the typists pool into a computerized patient record system, where available. Weather the cheaper letters written by junior staff justify the use of this group as "secretaries" remains questionable given their overall job description but may - in situations of tight budget - be a cost effective option.

Key Words:
discharge summary writing, cost effectiveness, electronic patient record system PADS, cost performance analysis